

REMARKS

Prior to entry of this Amendment, claims 1-37 are pending in the application. Claims 1-3, 5-15, 21-26, 28 and 37 have been withdrawn by the Examiner, and claims 4, 16-20, 27 and 29-36 have been rejected.

With this response, claims 1-3, 5-15, 21-26, 28 and 37 are canceled, and claims 4, 16-20, 27 and 29-36 are amended, and new claim 38 is added. Applicants reserve the right to pursue the subject matter of the claims in one or more related applications. No new matter is added. Upon entry of this Amendment, claims 4, 16-20, 27 and 29-36 and 38 will be pending.

CLAIM OBJECTIONS

Claims 16-20, 27 and 29-36 have been amended to remove dependencies to non-elected claims as suggested by the Examiner. Applicants therefore respectfully request withdrawal of the outstanding objections.

REJECTIONS UNDER 35 U.S.C. § 112

Claims 4, 16-20, 27 and 29-36 have been rejected under 35 U.S.C. § 112, second paragraph.

With this response, claims 4, 18 and 35 have been amended to clarify those aspects that the Examiner identified as being vague or indefinite. In particular, claim 4 as amended to clarify that the scattered light intensity signals are generated from light scattering particles in the assay sites. The examiners objections to the “repeating detection using one or more light filters”, “high” integrated light intensities, “factors” of claim 4 are also obviated in light of the amendments to claim 4.

Claim 18 has also been amended to remove or clarify terms that the examiner regarded as indefinite, vague and/or lacking antecedent basis. In particular, references to dividing signals and setting pixel values are no longer present in claim 18, nor is the limitation of "the two or more signals" which the Examiner cited as lacking antecedent basis.

Claim 35 has also been amended and no longer includes the phrase "a small volume density" cited by the Examiner.

Accordingly, Applicants respectfully request withdrawal of the rejection of claims 4, 16-20, 27 and 29-36 under 35 U.S.C. § 112, second paragraph.

REJECTIONS UNDER 35 U.S.C. § 102

Claims 4, 17, 18, and 31-36 were rejected under 35 U.S.C. § 102 as being anticipated by U.S. Patent No. 6,171,793 to Phillips et al. Applicants respectfully disagree, and contend that Phillips et al does not disclose each and every element of any of claims 4, 17, 18, or 31-36, as amended. In fact, Phillips discloses a completely different method of extending dynamic range of a detector compared to the methods taught and claimed in present application.

Phillips et al. discloses a method of extending the dynamic range of a detector for gene probe arrays labeled with fluorescent reporter groups. In particular, the method of Phillips et al. involves collection of fluorescent signals from multiple sites on a gene probe array at two different wavelengths (i.e., 530nm and 570nm), where the signal intensity at one wavelength can exceed the dynamic range of the detector for some sites of the array, while the signal intensity at the other wavelength is within the range of the detector. A scale factor correlation function is calculated based on a functional fit to a plot of the detector response at the two different wavelengths for all the sites on the array (e.g., see step 134, FIG. 12 and step c of claim 1). For sites that generated a signal which saturated the detector at one wavelength, the calculated scale factor correlation function is applied to the signal at the other

wavelength where it is within the dynamic range of the detector, such that the signal at the wavelength where the detector is saturated is extrapolated (e.g., see step 136, FIG. 12 and step d of claim 1).

In contrast, the present invention utilizes one or more intensity-reducing optical filters to reduce intensity of scattered light detected by a sensor to within the dynamic range of the sensor. A filter-specific conversion factor may then be used to adjust the filtered signal to determine the original intensity of the signal. Unlike in Phillips, the conversion factor is predetermined, and is not derived from a calculated correlation function between two measurements of a sample.

As stated above, Phillips does not teach each and every limitation of the present claims. For example, referring to independent claim 4, Phillips does not teach applying at least one optical filter having an optical density to provide a reduced-intensity scattered light signal; detecting a second set of integrated scattered light intensity signals comprising the reduced-intensity integrated scattered light signals; or converting the reduced-intensity integrated scattered light signals to a scaled signal using a conversion factor related to the optical density of the optical filter.

Claims 17, 18, and 31-36 depend from claim 1, and therefore are patentable over Phillips for at least the same reasons as claim 4. In particular, with regard to claim 17, Applicants respectfully disagree with the Examiner's contention that Phillips teaches factors for scaling the signals which are calculated from a transmission curve for the filter. Rather, Phillips teaches only generating a plot of the data detected at the two sampled wavelengths (530nm and 570nm) to calculate a correlation function that is then used to extrapolate a portion of the sampled data that fell outside of the dynamic range of the detector at one of the two wavelengths. Thus, Phillips does not teach the use of a filter-dependent intensity conversion factor, e.g., related to wavelength-dependent or wavelength independent reductions in the intensity of light transmitted through the filter.

Accordingly, Applicants respectfully request withdrawal of the rejections of claims 4, 17, 18, and 31-36 under 35 U.S.C. §102.

REJECTIONS UNDER 35 U.S.C. § 103

Claims 16, 19, 20, 27, 29 and 30 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Phillips et al. in view of U.S. Patent No. 5,350,922 to Bartz.

Applicants respectfully contend that the characteristics of the light scattering particles described in Bartz do not cure the deficiencies of Phillips, and the combined teachings of Phillips and Bartz do not teach or suggest each and every limitation of the present claims for at least the same reasons discussed above with respect to Phillips.

In particular, the Examiner states that Bartz teaches the use of a bandpass interference filter in order to pass corresponding wavelength bands by fiber optic probes. Applicants assume that the Examiner's proposed combination of the bandpass interference filters of Bartz with Phillips' method of extending linear dynamic range is directed towards the Applicants' claim 19 as no other explanation of the rejection of claim 19 under 35 U.S.C. 103 is provided. Applicants contend that, even if the cited bandpass interference filters pass corresponding wavelengths bands by fiber optic probes, and even if one were motivated to use such band pass filters in the method of Phillips "in order to reduce the optical and electronic signal to noise ratio" as suggested by the Examiner, the proposed combination does not teach or suggest each and every limitation of amended claim 19. For example, using such band pass filters to reduce a signal to noise ratio does not cure any of the deficiencies of Phillips with respect to any of the steps (b), (c) or (d) of independent claim 4 as described above. Moreover, Bartz does not address the use of other types of filters claimed in the present invention for reducing intensities of scattered light signals, e.g., neutral density filters which do not filter light according to particular wavelengths as do the bandpass filters of Bartz.

Similarly, with regard to claims 16, 20, 27, 29 and 30, even if one were motivated to combine the alleged teachings of Bartz related to a white light source (as applied by the Examiner to the instant claims 16 and 27) and/or related to extended range (as applied

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by the Examiner to the instant claims 29 and 30), the combined teachings do not cure any of the above-described deficiencies of Phillips.

With regard to claim 20, applicants respectfully disagree that it would have been obvious for one skilled in the art to utilize one or more intensity-reducing filters to transmit the claimed amounts of light. Moreover, even if one were motivated to utilize such filters in the method of Phillips, the combined teachings would not provide each and every limitation of the claimed invention as described above.

Accordingly, for at least the reasons stated above, Applicants respectfully request withdrawal of the rejections of claims 16, 19, 20, 27, 29 and 30 under 35 U.S.C. § 103(a) as being unpatentable over Phillips et al. in view of Bartz.

CONCLUSION

Applicant respectfully requests the entry of the foregoing remarks into the file of the above-captioned application. Applicant believes that each ground for rejection or objection has been successfully overcome or obviated and that claims 4, 16-20, 27 and 29-36 and 38 are in condition for allowance. Withdrawal of the Examiner's rejections and allowance of the application are earnestly requested. If any outstanding issues remain, the Examiner is invited to telephone the undersigned to discuss the same.

It is not believed that any fees are required beyond those that are otherwise provided for in the Petition for Extension of Time accompanying this paper. However, if additional extensions of time and/or fees are necessary to prevent abandonment of this application, then such extensions of time are hereby petitioned under 37C.F.R. §1.136(a), and any required fees are hereby authorized to be charged to Deposit Account No. 50-3013.

Respectfully submitted,

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Laura A. Coruzzi 30,742
Laura A. Coruzzi (Reg. No.)

By: Richard E. Ballard 46,078
Richard E. Ballard (Reg. No.)

JONES DAY
222 East 41st Street
New York, New York 10017-6702
(212) 326-3939